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Subject: 5-23 Work Group Call Topics
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Attachments: [2013 05 22 Area 1 Bounds on SWAC.pdf](#)
[2013 05 22 Area 1 Fish tissue trend sum.pdf](#)
[2013 05 22 Application of the SWAC Protocols.doc](#)

Please see the following information and the attached for items to be discussed during this afternoon's Work Group call.

For the Work Group call on 5-23 we will have the following completed for presentation

- Fish Tissue Trends
 - Fish tissue trend summary table for filet and whole body smallmouth bass (SMB) and carp
 - Trends were modified from previous trends to normalize only for lipids (not length)
 - Excluded the 1997 whole body data for SMB
 - Included 1993 data for SMB filets used by Kern (These data were not identified as from a specific location and, therefore, were not used previously).
- SWACs upper and lower bounds provided on an weighted basis.
- List of procedures to apply the SWAC.

Thank you!

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Table 2: SWAC Calculations By Reach and Bounds on Confidence Limits, Area 1, OU5 Kalamazoo River

Reach	Interval	SWAC	Number of Data Points	Chebyshev Area-weighted (5%LCL, 95%UCL) CI Bounds **	
Reach 1	0-6"	0.11	90	<DL	0.28
Reach 2	0-6"	0.23	42	0.14	0.33
Reach 3	0-6"	2.19	33	<DL	5.59
Reach 4	0-6"	0.42	92	<DL	1.16
Reach 5	0-6"	0.24	64	0.07	0.42
Reach 6	0-6"	0.72	43	<DL	1.91
Reach 7	0-6"	0.72	13	<DL	1.76
Mill Race	0-6"	0.33	17	<DL	0.91
Reach 8	0-6"	1.77	29	<DL	5.74
Reach 1	6-12"	0.06	87	0.01	0.12
Reach 2	6-12"	0.22	40	0.10	0.34
Reach 3	6-12"	4.25	32	<DL	10.11
Reach 4	6-12"	0.24	83	<DL	0.48
Reach 5	6-12"	0.11	58	<DL	0.23
Reach 6	6-12"	0.31	34	0.04	0.58
Reach 7	6-12"	0.66	11	<DL	2.40
Mill Race	6-12"	0.21	12	<DL	0.56
Reach 8	6-12"	1.79	22	<DL	5.28
Reach 1	12-24"	0.12	66	<DL	0.35
Reach 2	12-24"	1.05	26	<DL	5.16
Reach 3	12-24"	18.13	26	<DL	42.67
Reach 4	12-24"	0.26	49	<DL	0.78
Reach 5	12-24"	0.09	29	<DL	0.27
Reach 6	12-24"	0.39	26	<DL	0.98
Reach 7	12-24"	0.76	8	<DL	2.29
Mill Race	12-24"	0.07	11	<DL	0.17
Reach 8	12-24"	2.97	14	<DL	9.09

Notes:

* SWAC calculation by both GIS and R's SDMTools utilities
DL Detection Limit

** Chebyshev nonparametric bounds on the confidence limits about the mean are not the actual confidence limits (which may not be calculated if data does not fit a known distribution). The bounds are confidence limit values that cannot be exceeded no matter what the distribution of the underlying data really is. The true LCL and UCL must lie within the bounds, but are often quite a bit within these bounds (i.e. the true UCL may be quite noticeably less than the UCL bound.) For this reason, the nonparametric bound on the UCL is generally overly conservative and should not be used as an exposure point concentration.

Table 1. Percent Decline in Fish Tissue Total PCB Concentrations in Sections of Area 1 and the Reference Area of the Kalamazoo River, Michigan.

Area 1												
	SMB Fillet				SMB Whole Body				Carp Fillet			
	Lipid Corrected				Lipid Corrected				Lipid Corrected			
	Mixed order	First order	Straight linear		Mixed order	First order	Straight linear		Mixed order	First order	Straight linear	
ABSA-03	2.0%	3.4%	4.5%	ABSA-03	2.8%	3.2%	3.1%	ABSA-03	DNC	4.2%	6.3%	
ABSA-04	DNC	-0.3%	-1.2%	ABSA-04	DNC	6.0%	4.8%	ABSA-04	DNC	2.1%	2.5%	
ABSA-05	DNC	2.3%	1.6%	ABSA-05	10.4%	7.7%	9.2%	ABSA-05	DNC	2.8%	2.7%	
Urban	DNC	-0.4%	-1.3%	Urban	DNC	1.9%	1.7%	Urban	DNC	1.9%	2.3%	
Dams	DNC	2.6%	2.2%	Dams	DNC	7.5%	9.0%	Dams	DNC	2.8%	3.0%	
Reference Areas												
	SMB Fillet				SMB Whole Body				Carp Fillet			
	Lipid Corrected				Lipid Corrected				Lipid Corrected			
	Mixed order	First order	Straight linear		Mixed order	First order	Straight linear		Mixed order	First order	Straight linear	
ABSA-01	5.3%	5.1%	7.7%	ABSA-01	DNC	3.5%	3.7%	ABSA-01	DNC	0.03%	-1.3%	
ABSA-02	DNC	-0.87%	-0.75%	ABSA-02	DNC	-1.7%	-1.5%	ABSA-02	2.0%	3.4%	4.1%	
Notes:												
Non-significant percent decline												
Significant percent decline												
Mixed Order model converged												
Negative percent decline values indicate increases in Total PCB concentrations												
									PREPARED/DATE: LSV 5/22/13			
									CHECKED/DATE: NTG 5/22/13			

Protocols for the Application of the SWAC and Identification of Potential Remedial Areas within a Reach, Area 1, OU 5 Kalamazoo River

The following tasks are recommended for the application of the Area 1 SWACs and targeting potential remedial areas for inclusion the FS remedial alternative evaluation.

1. Identify reaches (sections) for further consideration in the FS remedial alternative evaluation or for additional sampling during the remedial design phase based on the SWAC for each reach.
2. Map physical characteristics of the selected reach. Physical characteristics will include the following, to the extent practical.
 - Grain size results (coarse vs. fine)
 - Location of the stream tube (mid-channel, inner or outer edge)
 - Probe data (soft vs. hard)
 - Slope data (to be provided by MDEQ)
 - Bathymetric data
 - Sinuosity
 - Physical features (point bars, crossings, bridges)
 - Velocity (high vs. low energy)
3. Perform statistical correlations/comparisons with PCB concentrations and above characteristics
4. Identify areas within a reach for potential remediation
5. Further refine areas by considering accessibility

After the above is complete, the applicability of RALs will be evaluated.